



# New Jersey Department of Health and Senior Services

## HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **LEAD SULPHATE**

CAS Number: 7446-14-2  
DOT Number: UN 1794

RTK Substance number: 1114  
Date: April 1997 Revision: April 2004

### HAZARD SUMMARY

- \* **Lead Sulphate** can affect you when breathed in.
- \* It is a **CORROSIVE** chemical and contact can severely irritate and burn the eyes.
- \* Skin contact can cause severe irritation and burns, itching, rash and pigment changes.
- \* **Lead Sulphate** can cause headache, irritability, reduced memory and disturbed sleep.
- \* **Lead Sulphate** can cause poor appetite, weight loss, colic, upset stomach, nausea, vomiting and muscle cramps.
- \* Higher exposure can cause muscle and joint pains, weakness, and fatigue.
- \* High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- \* **Lead** exposure may increase the risk of high blood pressure.
- \* **Lead Sulphate** may cause kidney and brain damage, and damage to blood cells causing anemia.

### IDENTIFICATION

**Lead Sulphate** is a white, crystalline (sand-like) powder. It is used in storage batteries and paint pigments.

### REASON FOR CITATION

- \* **Lead Sulphate** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, DOT, NIOSH, DEP, IARC, IRIS and EPA.
- \* This chemical is on the Special Health Hazard Substance List because it is **CORROSIVE**.
- \* Definitions are provided on page 5.

### HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- \* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.
- \* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

### WORKPLACE EXPOSURE LIMITS

The following exposure limits are recommended for *inorganic Lead dusts and fumes* (measured as *Lead*):

- OSHA: The legal airborne permissible exposure limit (PEL) is **0.05 mg/m<sup>3</sup>** averaged over an 8-hour workshift.
- NIOSH: The recommended airborne exposure limit is **0.1 mg/m<sup>3</sup>** averaged over a 10-hour workshift and so that worker blood lead remains less than **0.060 mg/m<sup>3</sup> per 100 grams** of whole blood.
- ACGIH: The recommended airborne exposure limit is **0.05 mg/m<sup>3</sup>** averaged over an 8-hour workshift.

### WAYS OF REDUCING EXPOSURE

Although the primary route of exposure to **Lead Sulphate** is through inhalation, you can be exposed to **Lead Sulphate** if it gets in your mouth and is swallowed. To reduce exposure by all routes the following actions are recommended:

- \* Enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- \* Wear protective work clothing and foot coverings.
- \* Wash thoroughly immediately after exposure to **Lead Sulphate** and at the end of the workshift.
- \* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Lead Sulphate** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

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## HEALTH HAZARD INFORMATION

### Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Lead Sulphate**:

- \* Contact can severely irritate and burn the eyes.
- \* Skin contact can cause severe irritation and burns, itching, rash and pigment changes.
- \* **Lead Sulphate** can cause headache, irritability, reduced memory and disturbed sleep.
- \* **Lead Sulphate** can cause poor appetite, weight loss, colic, upset stomach, nausea, vomiting and muscle cramps.

### Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Lead Sulphate** and can last for months or years:

### Cancer Hazard

- \* While **Lead Sulphate** has not been identified as a carcinogen, *Lead* and certain *Lead compounds* have been determined to be human carcinogens. **Lead Sulphate** should be handled with extreme caution.

### Reproductive Hazard

- \* While **Lead Sulphate** has not been identified as a teratogen or a reproductive hazard, *Lead* and certain *Lead compounds* have been determined to be teratogens and may cause reproductive damage. **Lead Sulphate** should therefore be handled with extreme caution.

### Other Long-Term Effects

- \* Higher exposure can cause muscle and joint pains, weakness, and fatigue.
- \* High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- \* *Lead* exposure may increase the risk of high blood pressure.
- \* **Lead Sulphate** may cause kidney and brain damage, and damage to blood cells causing anemia.
- \* Repeated exposure can cause *Lead* to accumulate in the body. It can take years for the body to get rid of excess *Lead*.

## MEDICAL

### Medical Testing

Before first exposure, and every six months thereafter, OSHA requires your employer to provide (for persons exposed to **30 micrograms (0.03 mg)** or more of *Lead* per cubic meter of air) the following tests:

- \* Blood *Lead* test.
- \* ZPP test (a special test for the effects of *Lead* on blood cells).

Before first exposure, and yearly for exposed persons with blood *Lead* levels over **40 micrograms (0.04 mg) per 100 ml** of whole blood, OSHA requires a complete medical history and exam with the above tests, and:

- \* Complete blood count.
- \* Kidney function tests.
- \* Exam of the nervous system.
- \* EEG.

OSHA requires your employer to provide you and your doctor with a copy of the *Lead* Standard: 29 CFR 1910.1025 and 1926.62.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

### Mixed Exposures

- \* Body exposures to *Lead* from hobbies using *Lead* solder or pigments, target practice, and drinking moonshine made in *Leaded* containers, will increase *Lead* levels. Repeated breathing or handling of *Leaded* gasoline may also add to body *Lead* levels.

## WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- \* Where possible, automatically transfer **Lead Sulphate** from drums or other storage containers to process containers.
- \* Specific engineering controls are required for this chemical by OSHA. Refer to the OSHA Standard: 29 CFR 1910.1025 for *Lead*.
- \* Work surfaces should be cleaned thoroughly on a routine basis.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- \* Workers whose clothing has been contaminated by **Lead Sulphate** should change into clean clothing promptly.
- \* Maintain all surfaces as free as possible from accumulations of **Lead Sulphate** dust.
- \* Do not take contaminated work clothes home. Family members could be exposed.
- \* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Lead Sulphate**.
- \* Eye wash fountains should be provided in the immediate work area for emergency use.
- \* If there is the possibility of skin exposure, emergency shower facilities should be provided.
- \* On skin contact with **Lead Sulphate**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Lead Sulphate**, whether or not known skin contact has occurred.
- \* Do not eat, smoke, or drink where **Lead Sulphate** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.
- \* Use a vacuum or a wet method to reduce dust during clean-up. **DO NOT DRY SWEEP**.
- \* When vacuuming, a high efficiency particulate air (HEPA) filter should be used, not a standard shop vacuum.

## PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

## Clothing

- \* Avoid skin contact with **Lead Sulphate**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- \* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.
- \* Safety equipment manufacturers recommend *Spunbonded Olefin* as a protective material.

## Eye Protection

- \* Wear impact resistant eye protection with side shields or goggles.
- \* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

## Respiratory Protection

**IMPROPER USE OF RESPIRATORS IS DANGEROUS.** Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

- \* Where the potential exists for exposure not higher than **0.5 mg/m<sup>3</sup>**, use a half-mask, air purifying respirator equipped with high efficiency filters.
- \* Where the potential exists for exposure not higher than **2.5 mg/m<sup>3</sup>**, use a full facepiece, air purifying respirator with high efficiency filters.
- \* Where the potential exists for exposure not higher than **50 mg/m<sup>3</sup>**, use any powered-air purifying respirator with high efficiency filters or a half-mask supplied-air respirator operated in a positive pressure mode.
- \* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Lead Sulphate**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- \* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters, cartridges, or canisters to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- \* Where the potential exists for exposure greater than **50 mg/m<sup>3</sup>** but less than **100 mg/m<sup>3</sup>**, use supplied-air respirators with full facepiece, hood, helmet or suit, operated in a positive pressure mode.
- \* Where the potential exists for exposure greater than **100 mg/m<sup>3</sup>**, use full facepiece, self-contained breathing apparatus operated in a positive pressure mode.

## QUESTIONS AND ANSWERS

- Q: If I have acute health effects, will I later get chronic health effects?
- A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.
- Q: Can I get long-term effects without ever having short-term effects?
- A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.
- Q: What are my chances of getting sick when I have been exposed to chemicals?
- A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.
- Q: When are higher exposures more likely?
- A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).
- Q: Is the risk of getting sick higher for workers than for community residents?
- A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.
- Q: Don't all chemicals cause cancer?
- A: No. Most chemicals tested by scientists are not cancer-causing.
- Q: Can men as well as women be affected by chemicals that cause reproductive system damage?
- A: Yes. Some chemicals reduce potency or fertility in both men and women. Some damage sperm and eggs, possibly leading to birth defects.
- Q: Who is at the greatest risk from reproductive hazards?
- A: Pregnant women are at greatest risk from chemicals that harm the developing fetus. However, chemicals may affect the ability to have children, so both men and women of childbearing age are at high risk.
- Q: Should I be concerned if a chemical is a teratogen in animals?
- A: Yes. Although some chemicals may affect humans differently than they affect animals, damage to animals suggests that similar damage can occur in humans.

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The following information is available from:

New Jersey Department of Health and Senior Services  
Occupational Health Service  
PO Box 360  
Trenton, NJ 08625-0360  
(609) 984-1863  
(609) 984-7407 (fax)

Web address: <http://www.state.nj.us/health/eoh/odisweb/>

### **Industrial Hygiene Information**

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

### **Medical Evaluation**

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

### **Public Presentations**

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

### **Right to Know Information Resources**

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

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## DEFINITIONS

**ACGIH** is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

**CFR** is the Code of Federal Regulations, which consists of the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

**DEP** is the New Jersey Department of Environmental Protection.

**DOT** is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

**EPA** is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

**IARC** is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

**IRIS** is the Integrated Risk Information System database of the federal EPA.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

**mg/m<sup>3</sup>** means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

**NAERG** is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

**NFPA** is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

**NIOSH** is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

**NTP** is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

**OSHA** is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

**PEL** is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

**PIH** is a DOT designation for chemicals which are Poison Inhalation Hazards.

**ppm** means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

**STEL** is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

**TLV** is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

## HANDLING AND STORAGE

- \* Prior to working with **Lead Sulphate** you should be trained on its proper handling and storage.
- \* **Lead Sulphate** must be stored to avoid contact with POTASSIUM since violent reactions occur.
- \* **Lead Sulphate** is not compatible with STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); MAGNESIUM; and ALUMINUM.
- \* Store in tightly closed containers in a cool, well-ventilated area.

## FIRST AID

**For POISON INFORMATION call 1-800-222-1222**

## Eye Contact

- \* Immediately flush with large amounts of water. Continue without stopping for at least 30 minutes, occasionally lifting upper and lower lids. Seek medical attention immediately.

## Skin Contact

- \* Quickly remove contaminated clothing. Immediately wash area with large amounts of soap and water. Seek medical attention immediately.

## Breathing

- \* Remove the person from exposure.
- \* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- \* Transfer promptly to a medical facility.

## PHYSICAL DATA

**Water Solubility:** Very slightly soluble

### OTHER COMMONLY USED NAMES

**Chemical Name:**

Sulfuric Acid, Lead (2+) Salt (1:1)

**Other Names:**

Lead (II) Sulfate; Anglislite; Freemans White Lead; Fast White; Milk White

*Not intended to be copied and sold for commercial purposes.*

CHEMTREC: (800) 424-9300  
NJDEP HOTLINE: 1-877-WARN-DEP

NEW JERSEY DEPARTMENT OF HEALTH AND  
SENIOR SERVICES

## Right to Know Program

PO Box 368, Trenton, NJ 08625-0368  
(609) 984-2202